What is claimed is:

1. A WDM optical communication system including an arrangement for assessing the polarization of each optical signal within a plurality of wavelength division multiplexed signals propagating along a transmission path, the arrangement comprising

at least one in-line polarimeter disposed along and integral with said transmission path, said at least one in-line polarimeter configured to out-couple predetermined portions of each optical signal passing therethrough to collect information with respect to the state of polarization for each optical signal; and

a network control element, responsive to the output from said at least one in-line polarimeter, for either one of modifying and controlling the polarization of one or more of said optical signals in response to the state of polarization information.

2. The WDM optical communication system as defined in claim 1 wherein the at least one in-line polarimeter comprises a plurality of in-line polarimeters.

3. The WDM optical communication system as defined in claim 1 wherein the at least one in-line polarimeter comprises a single in-line polarimeter.

4. The WDM optical communication system as defined in claim 1 wherein at least one in-line polarimeter comprises a partial polarimeter.

5. The WDM optical communication system as defined in claim 1 wherein at least one in-line polarimeter comprises a complete polarimeter.

6. The WDM optical communication system as defined in claim 1 wherein the system further comprises an RF tone generator for impressing a test RF signal onto one or more preselected wavelengths within the plurality of wavelengths and using the in-line polarimeter to determine the relative fraction of light incident on a particular detector with respect to the test RF signal.

7. The WDM optical communication system as defined in claim 1 wherein the system further comprises an RF tone generator for impressing a test RF signal onto one or more preselected polarizations with the plurality of optical signals and using the in-line polarimeter to determine the relative fraction of the light incident on a particular detector with respect to the test RF signal.

8. An active polarization control arrangement for use in an optical transmission system, the active polarization control arrangement comprising

a polarization control element responsive to an input optical signal propagating along an optical transmission path, the polarization control element for producing as an output an optical signal exhibiting a predetermined state of polarization;

an in-line polarimeter formed as integral with the optical transmission path and configured to out-couple signals determined by the state of polarization of the input optical signal; and

a feedback control element disposed between the in-line polarimeter control signal output and an adjustable input to the polarization control element, said feedback control element for providing correction signal inputs to the polarization control element based on the control signal outputs from the in-line polarimeter.

9. An active polarization control arrangement as defined in claim 8 wherein the in-line polarimeter is defined as a complete in-line polarimeter and comprises a set of four gratings incorporated in optical fiber, each set tilted at one of the predetermined angles of 0°, 60°, 150°, and 90°, with a waveplate oriented at an angle of 30° with respect to the optical axis disposed between the second and third grating.

10. An active polarization control arrangement as defined in claim 8 wherein the in-line polarimeter is defined as a complete in-line polarimeter and includes a set of four dielectric filters, each filter tilted at one of the predetermined angles of 0°, 60°, 150°, and 90°, with a waveplate oriented at an angle of 30° with respect to the optical axis disposed between the second and third filter..

11. An optical transmission system comprising a transmitter for providing one or more optical input signals, an optical transmission path and an optical receiver, said optical transmission system further comprising

at least one active polarization control arrangement, each active polarization control arrangement including

a polarization control element responsive to one or more input optical signals propagating along the optical transmission path, the polarization control element for producing as an output an optical signal exhibiting a predetermined state of polarization;

an in-line polarimeter integral with the optical transmission path configured to out-couple signals determined by the state of polarization of the input optical signal; and

a feedback control element disposed in a signal path between the in-line polarimeter control signal output and an adjustable input to the polarization control element, said feedback control element for providing correction signal inputs to the polarization control element based on the control signal outputs from the in-line polarimeter.

12. An optical transmission system as defined in claim 11 wherein the optical transmission path comprises at least a section of birefringent fiber and the active polarization control arrangement is used to orient the polarization axes of the optical output from the in-line polarimeter with the optical axes of the birefringent transmission path fiber.

13. An optical transmission system as defined in claim 11 wherein the transmission system further comprises a polarization beam splitter, disposed at the output of the in-line polarimeter, the polarization control element utilized to adjust the output signal state of polarization to align with one of the beamsplitter principal axes.

14. An active polarization control arrangement as defined in claim 11 wherein the arrangement further comprises wavelength filters disposed at each output of the polarization beam splitter to discriminate between two orthogonal channels with closely spaced wavelengths.

15. The optical communication system as defined in claim 11 wherein the in-line polarimeter of the active polarization control arrangement is a complete polarimeter and comprises a set of four gratings incorporated in optical fiber, each set tilted at one of the predetermined angles of 0°, 60°, 150°, and 90°, with a waveplate oriented at an angle of 30° with respect to the optical axis disposed between the second and third gratings.

16. The optical communication system as defined in claim 11 wherein the in-line polarimeter of the active polarization control arrangement comprises a complete polarimeter and includes a set of four dielectric filters, each filter tilted at one of the predetermined angles of 0°, 60°, 150°, and 90°, with a waveplate oriented at an angle of 30° with respect to the optical axis disposed between the second and third filters.

17. The optical communication system as defined in claim 14 wherein the at least one active polarization control arrangement comprises a first arrangement disposed at an optical transmitter and a second arrangement disposed at an optical receiver.

18. The optical communication system as defined in claim 11 wherein the least one active polarization control arrangement comprises an in-line polarimeter located at the optical receiver and the polarization controller located at the optical transmitter, using a telemetry channel to transmit feedback information from the in-line polarimeter to the polarization controller.